

## Objectives: Weight and Balance (and performance)

- practical use of weight and balance and performance charts/limits

## Equipment:

- Chalkboard or paper and pencil
- POH for plane, or W&B data and charts
- Density Altitude chart

## Elements:

1. Ground - Weight and Balance
  - **WHERE** To find current W&B data
  - **WHAT** weight, arm, moment (BEW incl. oil, LEW doesn't incl. oil)
  - **WHY** remain in CG range, and weight limits tested by manufact.
  - Enter correct numbers for calculations (seat position changes arm for PA38-112)
  - Fuel 6lbs/gal, oil 1 7/8lb /qt,
  - Useful load= fuel + people + stuff
  - Payload= people + stuff
2. Ground - Performance
  - Why important (hot, high, humid, overloaded, where you can go/leave, etc)
  - Takeoff, ground roll, over 50ft
  - Landing, ground roll, over 50ft
  - Climb, time and distance
  - Fuel burn, PROPERLY LEANED, best power
  - Speed, best power, TAS not GS

## Common Errors:

- Incorrect data (don't guess weights or performance, figure it out from charts)
- Misinterpret chart/tables
- Incorrect calculations

## References:

AIM  
POH

## Possible Review Questions:

1. How much does fuel weight per gallon?
2. What is the useful load of your plane?
3. What is the fuel burn of your plane?

## Key Numbers for WVI area:

Useful load N25915:

Basic Empty Weight N25915:

No wind, 20C, WVI, PA38-112 takeoff. GROUND ROLL: 950ft

No wind, 20C, WVI, PA38-112 landing. GROUND ROLL: 750ft

Best power (75%) range, full fuel, 15C, 4500ft cruise: 400NM (with 45min res at 55% power left)

Speed, best power (75%), 15C, 4500ft, 2500- RPM: 103KTAS

Useful load N2506G:

Basic Empty Weight N2506G:

OVER 50FT: 1600ft

OVER 50FT: 1570ft